

# Environmental Sustainability and Change



# Transboundary Protected Natural Areas and Their Role In Nature Conservation of Northeast Asia

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International relationships in the sphere of environmental protection and ecosystem preservation in transboundary areas such as Northeast Asia have followed a complicated path in their development. These relationships went along the path from distrust and suspicion to growing mutual understanding. Through their interactions, scientists exposed many global and regional ecological problems that require immediate resolution by neighboring countries.

At the end of the twentieth century it became obvious that current models of nature use must be replaced because of numerous ecological crises and the intensification of global problems connected with climate change—alteration of the atmosphere composition, pollution, the loss of biological diversity, the degradation of ecosystems, the exhaustion of the natural resource base, and the continual growth of demographic and social problems. A new system of common priorities based on the realization to transition to a sustainable development concept began to emerge. Recently the term “sustainable nature use”, which is the Russian analog of “sustainable development”, had started being used in Russia.

The most important task that lies at the base of carrying out the concept of sustainable development is the development of principles and methods to optimize mutual relations between humans and the environment. The most important component is the creation of prerequisites for the preservation of nature and its restoration. The primary method for this is the creation of an ecological framework consisting of a system of protected natural territories.

A separate question is the issue of a strategy for sustainable development in territories or marine areas that belong to two or more countries. In the framework of transboundary protected units, we noted a huge variation in the impact on ecosystems, which in turn causes the appearance of multiple ecological (geological) problems.

Transboundary territories on the borders between Far East of the Russian Federation, Democratic People's Republic of Korea, and the People's Republic of China are very typical example of such units. Here the significant ecosystem variables cause the occurrence of multiple transboundary ecological problems. Also very important are the differences in the types of nature use. For example, the uneven forestation level on both sides of the borders range 3-4 times. An even higher difference is observed in the animal population, and the difference in economic activities is also high. For example about 270,000 people (average population density is 39.6 persons per mi<sup>2</sup>/15.3 per km<sup>2</sup>) inhabit the Russian part of Khanka Lake basin while about 1.9 million people (population density exceeds 130 persons per mi<sup>2</sup>/50 per km<sup>2</sup>) inhabit the border area of the People's Republic of China that directly influences ecosystems of the Khanka lake basin. The protected area ratio is inverse to the population ratio. All these factors result in sharp landscape contrasts at the border crossing (*Kachur 2005b, 2007*).

Unfortunately despite of the recognition of these facts, the necessary coordination of nature use in the border regions advances very slowly. Along with the recognition that some violation exists (pollution, destruction of ecosystems), an important element of nature use coordination is to determine the reasons of these violations. Forecasting future development considering revealed or forecasted ecological problems and restrictions is also important (*Kachur 2005a*).

The ecological restrictions can be divided into two large groups: 1) restrictions imposed by the characteristics of the natural conditions, and the resources' potential; and 2) restrictions caused by the characteristics of or a result of the existing economy system. The major elements of environmental restrictions are the ones directed towards preservation and towards the restoration of natural biodiversity. They are the most important guarantee of preservation of the natural habitat and acceptable ecological conditions.

Figure 3. (Left) Penkigney Bay. Chukotka, Russia.



The preservation of biodiversity is especially important in the areas that hold the key position in regards to the world's gene pool. Due to the characteristics of its geographical location, its topography, and history of development, Northeast Asia has had favorable conditions for the development of a large number of nature complexes that are unique not just for Asia but also for the whole world (Baklanov et al. 2003, Kachur 2005a). An exceptional richness of fauna and flora, dynamic poly-climatic structure, combination of the intense processes of species formation and preservation of the ancient communities, high biological productivity, and evolution of diverse complex forests are very characteristic for the region.

The active economic activity significantly changed the look of the area as well as many biosphere processes here. The shift to a concept of sustainable development is impossible without preservation and, unfortunately as the results of the latest research have shown, without rehabilitation of the natural biodiversity (Zhelezov 1999).

The assessment of the existing system of protected areas to ensure sustainable nature use in the transboundary regions of Northeast Asia showed that the existing systems can not carry out the necessary function of providing sustainable development of these regions. That is because these systems do not provide for biodiversity preservation in the transboundary ecosystems, and also can not form the corridors for the rehabilitation of the lost biodiversity in the adjacent areas of transboundary ecosystems.

Overall the countries have developed specially protected natural area (SPNA) systems. For example in Russia, the system of state natural *zapovedniks* (strict preserve) and national parks includes 100 *zapovedniks* with a total area of 129,000 mi<sup>2</sup>/33.5 million hectares (ha) (1.56% of the area of Russia) and 35 national parks covering 27,000 mi<sup>2</sup>/7 million ha (0.41 % of Russia) (Figure 2). In January 2008, 1,275 SPNA with a total area of 492,000 mi<sup>2</sup>/127.5 million ha existed in the Russian Far East. Of these, 50 protected areas had federal status, 888 had regional status, and 337 had local status. Data on the



Figure 2. Comparison of the number of specially protected natural areas in the Russian Far East, of all categories and their ratio to the area of the region.

SPNA system in China are in Figure 3.

Based on international experience, the best approach to the restoration of biodiversity, when biodiversity and environment conditions are unequal, is the creation of transboundary protected areas that can become a connecting link for natural restoration of biodiversity (Figure 4). The transnationalization of protected natural areas is in the initial stage of development (Kopylova 2003, Hamilton et al. 1996). These processes are complex and characterized by a number of serious problems of economic, political and ethical origin. It is still too early to talk about the active cooperation of SPNA of different countries; however, even today the role of transboundary specially

protected natural areas (TSPNA) is noticeable. In combination with the development of regional environmental networks, it marks the beginning of a new stage in the evolution of territorial nature preservation—transition from local and regional level to global.

It is necessary to consider the whole ecosystem in order to manage sustainable nature use and subsistence. That in turn will allow the creation of an ecological frame based on the principle of self-complementation. This means that theoretically the main part of the ecological frame can be located in one country and work as a core for support and, if necessary, for the restoration of biodiversity for the whole ecosystem. At the same time it provides a system of ecological corridors that will support the whole ecosystem.

An important component of the TSPNA system is the network of maritime, island and coastal SPNA (Baklanov et al. 2003). So far such a system has not been created in Eastern Asia, however, its establishment would be timely. Russia has three approved international natural preserves (Figure 4) (Kopylova 2003).

The first established TSPNA was the Russian-Finnish *zapovednik* Druzhba (Friendship). It was established on the basis of the agreement between the governments of Finland and Soviet Union in October 1989. It includes the Russian *zapovednik* Kostomukshsky (185 mi<sup>2</sup>/480 km<sup>2</sup>), and some smaller Finnish units which in total cover about 85 mi<sup>2</sup> (220 km<sup>2</sup>). Each country is responsible for financing the preservation of the protected units, though both countries have a joint coordination council for regulation of scientific work and ecological education.

The second TSPNA was established on March 29th, 1994, on the basis of the agreement between the Russian Federation, Mongolia, and the People's Republic of China. The TSPNA encompasses the Russian National Nature Biospheric Daursky (total area 173 mi<sup>2</sup>/44,752 ha and protection zone 367 mi<sup>2</sup>/95,000 ha), the Mongolian reserve Mongol Daguur (total area 405 mi<sup>2</sup>/105,000 hectares), and the Chinese preserve Dalai Nor (total area 2,860 mi<sup>2</sup>/740,000 ha, including specially protected sections of 63 mi<sup>2</sup>/16,300 ha). In the

future it is planned to expand all three preserves with the goal of converging their boundaries and establishing a joint protected network of Dauria steppes, obtaining biosphere wildlife reserve status for the Mongolian and Chinese preserves, and creating an international biosphere wildlife reserve on the basis of the transboundary protected area.

The third TSPNA is the international preserve in the Khanka Lake basin. The preserve stretches along the coast of Khanka Lake. It was established on the basis of the agreement signed on April 25th, 1996, between the Russian Federation and the People's Republic of China. The reserve includes the Russian *zapovednik* Khankaisky (total area 146 mi<sup>2</sup>/37,989 ha and protection zone 284 mi<sup>2</sup>/73,743 ha) and the Chinese preserve Sinkai-Hu (total area 222 mi<sup>2</sup>/57,700 ha). The significant part of Khankaisky is located in a closed border zone with strict admission rules. In 1975 this area received the status of wetlands of international significance mainly because of its waterfowl habitat (Bocharnikov *et al.* 2001). The protection status in Sinkai-Hu is similar to the status of Russian preserves and their protection zones. The joint Russian-Chinese commission coordinates the transboundary cooperation.

The establishment of several new TSPNA in the Russian Far East is currently under discussion or in the planning stage: 1) international biosphere in the lower reaches of Tumen River; 2) TSPNA that will include the Russian Bolshekhkhtsirsky *zapovednik* and the Chinese Sanjiang preserve; 3) TSPNA that will include the Russian Khingansky *zapovednik* and the Chinese Hunhe biosphere preserve; and 4) Beringia International Natural Park (Russia, USA). The most likely projects to be implemented in the near future are the International Biosphere Preserve in the lower reaches of Tumen River and Beringia International Natural Park.

The Tumen River basin and adjoining marine areas form the central zone of the international waters and biodiversity of the region, which in turn are key to the river

SPNA types	Number	Area in hectares (x10,000)	% ratio of the total number of SPNA	% ratio of the total area of SPNA
Total in the country	2395	15153.50	100	100
National level	265	9169.7	11.06	60.51
Local level	2130	5983.8	88.94	39.49
Local: Provincial level	793	4441.80	33.11	29.31
Local: Urban level	422	522.44	17.62	3.45
Local: District level	915	1019.56	38.20	6.73

Figure 3. The system of specially protected natural areas in People's Republic of China.

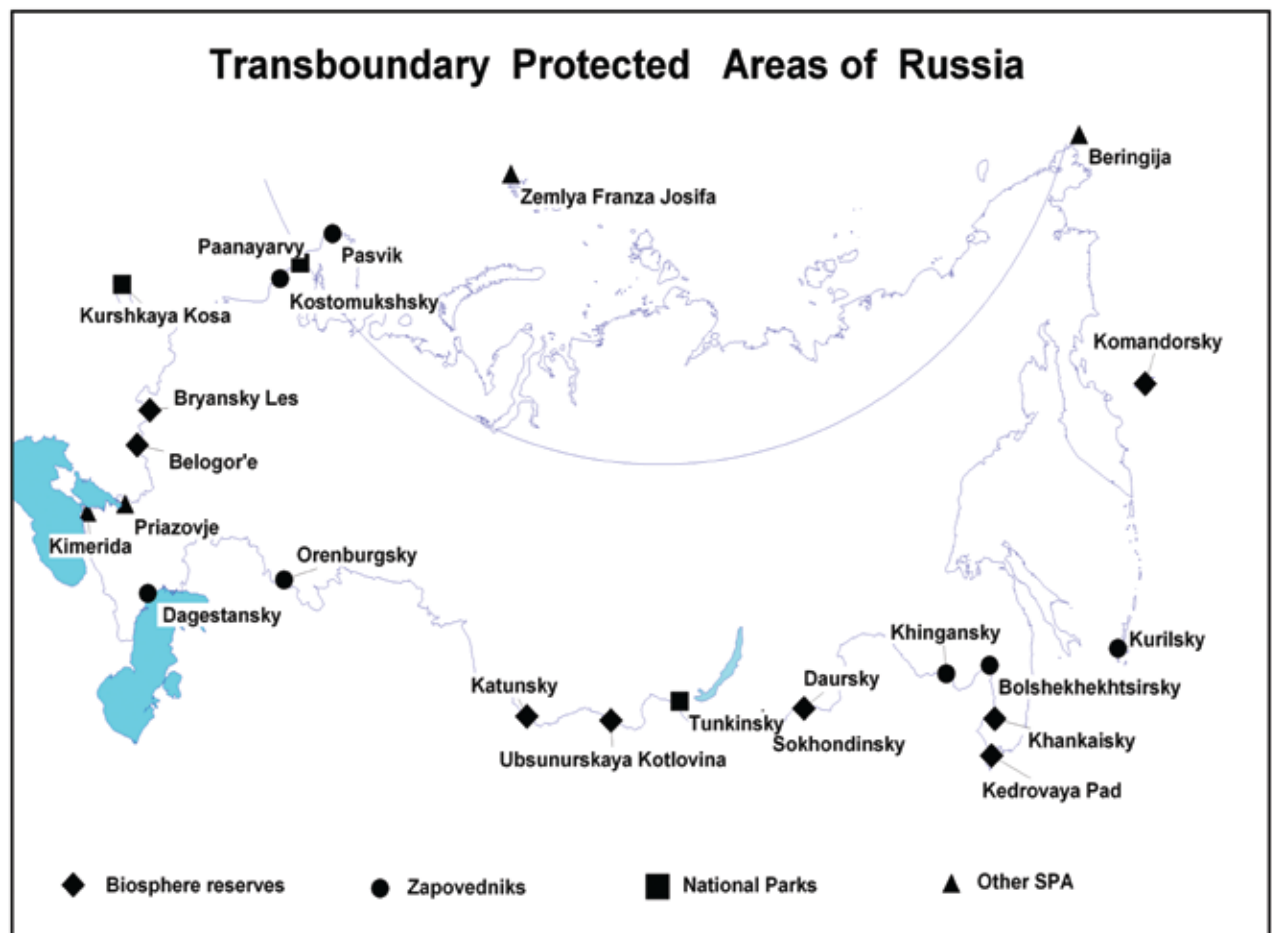
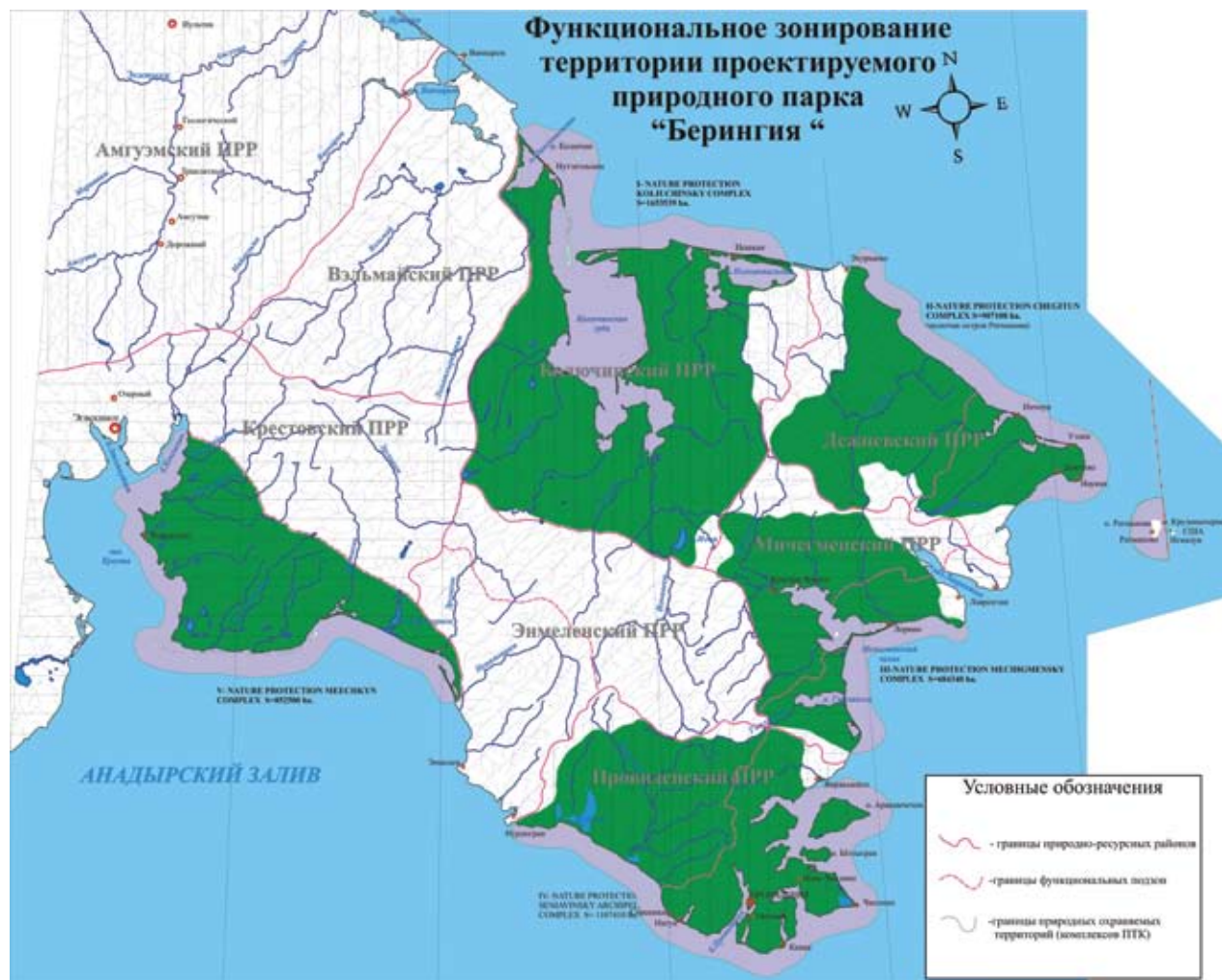


Figure 4. (Right) Existing and potential transboundary protected natural areas of Russia.



Figure 5. (Below) Project of an International Biosphere Reserve Zonation Arrangements in China, Russia and the DPR Korea.

Figure 6. (Right) A sample version of the organization of the Russian part of the Beringia International Natural Park.



basin's environmental protection. A great variety of birds are present in the coastal and marine areas, and a large number of marine and terrestrial animals use the area for their migrations. The wetlands are an important part of the East Asian migration route between Siberia and Australia. A number of transboundary problems in the region are related to the influence of local and regional air pollution and pollution of land and coastal waters. The most important resources of this territory and adjoining water areas of Asia

are wetlands, bird population, marine ecosystems, forest and steppe ecosystems, wildlife populations, and air quality.

In order to preserve these valuable water resources and biodiversity, it is necessary to strengthen the measures against environmental threats. For this purpose the world community has conducted a series of actions towards establishment of an international biosphere reserve in the lower reaches of Tumen River (Figure 5) (Kachur 2007,

UNDP 2004).

To protect the unique ecosystems of Northern Asia and America it is planned to organize an international park under the tentative name Beringia that will include the eastern part of Chukotsky Peninsula (Figure 6) and the north-western part of Seward Peninsula in Alaska (Baklanov et al. 2000, Zheleznov 1995, 1999). The park is based on the unity of ecosystem, its genesis, historical similarity in exploration, and uniqueness of ethnic relations and culture

of people inhabiting Chukotka and Alaska.

The northern part of the Pacific Ocean is an unique ecosystem of global value with a varied biodiversity of animal species including large sea mammals. Closer to the Bering Strait, the biodiversity and density of marine animals increases slightly because of the narrowing of the strait and the changing marine ecological conditions. During the last decade the habitat, number, and density of terrestrial vertebrate animals that reside along these coasts drastically decreased.

Considering the social specifics of the population inhabiting the park area and the specifics of their economy, the preservation of the traditional forms of nature use and subsistence and the preservation of the lifestyle of Beringia Native peoples becomes one of the park's most important functions and, perhaps its main goal.

In the conclusion, it is necessary to note that the main positive aspects in establishing transboundary protected natural areas that give them advantage over national specially protected natural areas are the following:

- Expansion of the total reserve area, due to merging of separate national SPNA, results in weakening of the "island effect" – greater and more vital populations become protected, and conditions for animal migrations improve.
- By merging several SPNA stability of an ecosystem increases, life expectancy of organisms grows, and the protection regime becomes more effective.
- The process of animal reintroduction becomes simpler.
- The greater area, especially in the case of large predators, strengthens the control over the numbers of animals that endanger the preservation of an ecosystem.
- The control over spreading of pathogenic and parasitic organisms and occurrence of hotbeds of diseases becomes easier.
- International cooperation in science allows standardizing research methods, sharing of expensive equipment and excluding techniques of data

gathering that lead to difficulties in subsequent analysis and comparison of results.

- The international natural reserve territories can join their efforts in rescues and in fighting fires, poaching, and illicit trade.
- There are advantages in the joint development of tourism, ecological education, and dissemination of information.
- The image of the international units is higher, and it is easier to receive the status of biosphere reserve or an area of world significance.

At the same time, the process of establishing and operating a TSPNA also has a number of the significant problems, which makes the work more complex than that of a national SPNA:

- There are differences in legislation, religious and cultural practices of peoples, languages, and attitudes towards nature (for example towards pests or introduced species).
- There is the potential to have an unequal partnership – political, financial distinctions, different professional



Photograph courtesy of Vladimir Zhuravkov

**Figure 7.** This road from Provedeniya leads to Novoe Chaplino in Chukotka, Russia, an area of exceptional scenic, natural and cultural importance. Residents of several smaller coastal villages were resettled here during the Soviet era (including Kivak (see Orekhov, this issue) and some also compete in the annual dog race *Nadezhda* (see cover). More information about this and other areas of the Nature-ethnic Park "Beringia" is available at: <http://www.beringiapark.ru/indexen.php>

- level of the personnel, different rights of the units within their countries, etc.
- Sometimes the partners have different goals – one aspires to develop tourism and the other strives for strict protection.
- There is the potential for poor communication between the preserves and difficulties in crossing the borders.
- The unequal value or absences of the scientific personnel on staff have a negative influence on scientific cooperation.

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